CLIMATOLOGICAL DATA FOR AUGUST, 1911.

DISTRICT NO. 10, GREAT BASIN.

ALFRED H. THIESSEN, District Editor.

GENERAL SUMMARY.

During August the weather was abnormally dry, there being very few local storms, and on the average only 2 rainy days in the district. In the Utah area 30 stations out of 73 reported no rain or only a trace, while in the remaining portion of the district precipitation fell in measurable quantities at only 9 stations. At those stations having long records, only 1 reported an amount above normal.

The temperature for the district averaged below normal. Light frosts were frequent in the mountain districts, but only slight damage was reported.

The average cool weather seemed to have no deterrent effects on agriculture, and the lack of moisture was not felt so much in the agricultural districts as on the ranges. Cattle, however, suffered but little, as springs held out well, giving them plenty of drinking water. In the agricultural sections the snows of the past winter furnished ample water for irrigation and power purposes.

The average number of rainy days was 2, clear days 21, partly cloudy days 7, and cloudy days 3.

TEMPERATURE.

The temperature for the district averaged 2.1° below normal. The highest monthly mean was 83.6° at Wendover, Utah, and the lowest was 54.9° at Tahoe, Cal. As a rule the highest means occurred on the western slope of the Wasatch Mountains in the Utah area, and in southern Nevada; while the lowest means were reported in the Oregon area and at the elevated stations in the California and Utah areas.

While the district average was below normal, the mean monthly temperature at the several stations varied greatly from the normal. Of the 47 stations having records long enough to compute normals, only 13 reported plus departures and these are located in western Utah and eastern Nevada. The greatest plus departure was 2.9° at Mount Nebo, Utah, and at Ely, Nev. The greatest negative departures occurred in central Nevada.

Chronologically the temperatures were quite even, there being no well-defined period of warmth or coolness for the district as a whole. But in the eastern half of the district that period extending from the 1st to the 21st was warmer than the remaining portion of the month; while in the western part there were no hot periods over any considerable area.

The highest temperatures occurred generally from the 16th to the 19th, the highest reported being 110° on the 17th at Corinne, Utah. The lowest temperatures occurred on various dates, although the most common were the 21st and 25th, the lowest reported being 23° on the 21st at Cokeville, Wyo.

PRECIPITATION.

The average precipitation for the district was 0.28 inch, which is about 0.61 inch below the normal. Over immense areas little or no moisture fell during the entire month. The heaviest amounts fell in the southern portion of the Utah area, but only at one station was an amount above normal recorded. In Nevada the average precipitation for August was the lowest since 1892.

What rain fell occurred at irregular intervals, and resulted for the most part from local storms.

No snow fell during this month.

VALUE OF MOUNTAINS TO CLIMATIC SAFETY FOR THE FRUIT GROWER.

By J. CECIL ALTER, Observer.

Located beneath peaks of almost perpetual snow and amidst topographic conditions tending to accentuate the vagaries of a mountain climate, there are in Utah numerous valleys, in the neighborhood of three-quarters of a mile above sea-level, that have climates of rare equability and gentleness; where the summer temperatures partake scarcely at all of the character of those on the unsheltered Great Basin plains, and where the winter cold is crisp but not intense.

Abandoning our old beliefs in a vicious rugged climate born of the snowcapped mountains, we begin to comprehend the fact that mountains, having certain favorable configurations, are actual assets, and not encumbrances, as weather producers and regulators, forming unique protection against the vicissitudes of climate so often found where the elevation tends to expose and not protect.

PROTECTION FROM LATE SPRING FROSTS.

The greatest weather enemy in all fruit districts, east and west, is the late, vagrant spring frost, which occurs under the immense high-air pressures that occasionally form over the United States in the late spring. These untimely frosts kill the fruit buds, after all nature has apparently concluded that spring has safely arrived.

In mountainous districts the maximum action of these frost-producing high-pressure areas is considerably hindered, but it is unmitigated in the Plains States and in the East. The dangerous sap-starting warm periods of winter occur in the mountains from the same sort of low-barometer area as in the Mississippi Valley and in the East, but their advance is greatly retarded and their effect minimized by the high mountain peaks and the general elevation of the land. A winter warm spell of sufficient length to start the sap practically never occurs in the mountain valleys, where a more equable condition of the storm-carrying atmosphere is enforced by the impeding mountains.

MOUNTAIN SHADOWS AN ADVANTAGE.

A greater influence for good, however, from the mountains, in favor of the fruit grower, is the shortening of the daylight; that is, the delaying of the morning sunshine and the advancing of the evening shadows, both of which are important aids in delaying the opening of fruit buds until spring has actually arrived. It will be seen that southerly exposures, which offer no such shadow protection from mountains to the east and west, will permit a much earlier budding of the fruit, and will thus increase the probability of loss by subsequent freezes. In valleys with a north-and-south trend this shadow protection for orchards on the east side of the valley amounts to from 30 minutes to 2 hours in the morning. This shortens the daily number of hours of sunshine on the orchards, and consequently delays the time of budding and blooming until a safer part of the season.

In this connection it is interesting to note that these same mountain shadows are every spring the means of saving a great deal of fruit that has been frosted and would be lost if the full might of the sunshine were thrown upon the frozen buds immediately after sunrise. It is well known that a fruit bud can withstand a temperature considerably below freezing for a great length of time providing it be thawed out slowly. The eastern orchardist has no protection from the sudden thawing of the buds, which results in so much damage; but the orchard that lies in the shadow of the mountains until the more distant valley air has been warmed in the sunshine, and has gradually flowed across to the mountain-shaded orchard to thaw the frozen buds gradually, recovers safely from a freeze that otherwise would prove disastrous.

INFLUENCE OF AIR DRAINAGE.

There is still another arm of safety that the mountain extends out over the orchards at its foot—one that has blessed into fruitage thousands of acres amidst weather conditions that have ruined many less-favored regions—and that is air drainage; the helpful influence of a steady stream or current of air, which usually flows down the mountain slope all night, ceasing only when the morning sun appears and changes the direction of flow. As soon as darkness overspreads the valley in the evening, the cool air begins to settle into the lowest places and to become quiet. Under a clear sky it will gradually grow cooler by radiation until morning, and for this reason the valley bottoms, where the quiet, cool air settles at night, are avoided by orchardists. Gradually during the night the lower parts of the valley fill with cold air, and this dead-air district enlarges and creeps up the slopes as the slowly cooling air from the mountain flows down by reason of its greater density.

The final freeze in the fruit bud, or the actual formation of the ice crystals, is an action of quietude, and it is greatly hindered and delayed by constant motion of the air. Ice may form in perfectly quiet air at 32° F., but if the air be in motion ice may not form on an object in the free-moving air until the temperature is several degrees lower. And if the atmospheric activity be persistent during the cold spell and the temperature drop not too great, the simple phenomenon of the air flowing down the slope through the orchards will prevent the formation of ice, or frost crystals, and thus the buds may show the effect of a temperature not lower than 34° after actually experiencing a 26° temperature.

HUMIDITY AND EVAPORATION.

Finally, the phenomenon of freezing the fruit buds, or of frost formation, takes place in a quiet air at a temperature of 32° F. only when the bud is saturated with moisture and when there is considerable moisture in the air to prevent the rapid escape of the bud moisture. The noteworthy dryness of the air which generally prevails in the Rocky Mountain districts, therefore, of itself, acting alone, is an influence that has many times prevented the formation of frost in the fruit buds even when the actual temperature of the surrounding dry, quiet air was several degrees below freezing.